SUPER-FAMILIES IN THE HYMENOPTERA AND GENERIC SYNOPSES OF THE FAMILIES THYNNIDÆ, MYRMOSIDÆ AND MUTILLIDÆ.

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The three families, Thynnidæ, Myrmosidæ and Mutillidæ have never been properly defined, or characterized, and their genera, at present, on account of the diversity between the sexes, and the difficulties attending their proper correlation, are in utter confusion, and often wrongly placed. This confusion is also due, to a certain extent, to a lack of sufficient study, and the careless and insufficient characterization of some of the species and genera by the original describers, so that until lately it has been impossible to bring them into anything like order.

This statement is well exemplified in Blake's description of the genus *Photopsis*. The genus is not only most carelessly and meagrely described, but the type of the genus is not mentioned; besides Blake has placed in it species that do not agree at all with his meagre description. I find placed in it, and in another genus characterized by him, representing females, representatives of no less than six distinct genera, some of which do not belong to the Mutillidæ at all, but to an allied family, characterized here under the name Myrmosidæ.

During the past two or three years I have devoted much time to the study of large series of the Mutillidæ, and the closely allied families, and have been able to correlate the sexes of most of the genera, either from specimens bred, taken *in coitu*, or from structural characters. The results of these studies I desire to present here succinctly, with the hope that it will help to clear up much of the existing confusion in these families, and thus make it easier sailing for other students.

The Hymenoptera may be conveniently separated into ten very natural superfamilies, and these again into minor families. In order that these may be recognized and to show the position that I believe the Thynnidæ, Myrmosidæ and Mutillidæ should occupy, I give below a table for distinguishing these superfamilies, and a table of the families of the Vespoidea, the superfamily to which they belong.

Attention is also called to the position assigned the Vespidæ, Eu-

menidæ, Masaridæ, Chrysididæ, Bethylidæ (part of the Proctotrypidæ, which I now consider a distinct family), Trigonalidæ, the new family Cosilidæ, and to the separation of the families Myzinidæ and Tiphiidæ, from the old family Scoliidæ. The superfamilies recognized may be thus distinguished:

Table of Superfamilies.

Suborder I. Heterophaga. Abdomen petiolate or subpetiolate, never broadly sessile; larvæ apodous.

* Hypopygium entire and closely united with the pygidium, the sting or ovipositor when present always issuing from the tip of the abdomen.

a. Pronotum not extending back to the tegulæ.

b. Tarsi dilated or thickened; pubescence of head and thorax feathery or plumose ..... Superfamily I. **APOIDEA.**

bb. Tarsi slender, *not* dilated or thickened, pubescence of head and thorax simple, not plumose ..... Superfamily II. **SPHEGOIDEA.**

aa. Pronotum extending back to the tegulæ, or the latter absent.

c. Trochanters always *one-jointed.*

d. Abdomen variable, rarely twice longer than the head and thorax united, most frequently much shorter; hind tibiæ in ♀ neither inflated nor strongly constricted at base. Petiole or first segment of abdomen simple, without a scale or node; winged forms with well developed tegulæ. Superfamily III. **VESPOIDEA.**

Petiole or first segment of abdomen composed of one or two scales or nodes; winged forms without or with imperfectly formed tegulæ ..... Superfamily IV. **FORMICOIDEA.**

dd. Abdomen in ♀ greatly elongated, several times longer than the head and thorax united, the segments constricted at sutures and flexible; hind tibiæ inflated and strongly constricted at base; abdomen in ♂ clavate. (pars) (Family Pelecinidæ) Superfamily V. **PROCTOTRYPOIDEA.**

cc. Trochanters *two-jointed.* Superfamily V. **PROCTOTRYPOIDEA.**

** Hypopygium divided or never united closely with the pygidium, the ovipositor issuing some distance before the tip of the abdomen; *trochanters always two-jointed.*

d. Front wings always without a stigma, the marginal vein, if present, linear, never large or stigmated; abdomen with the ventral segments hard and chitinous, without a fold.

e. Pronotum extending back to the tegulæ; front wings with a marginal and a basal cell, either complete or incomplete; antennæ straight, not elbowed ..... Superfamily VI. **CYNIPOIDEA.**

ee. Pronotum not extending back to the tegulæ; front wings with neither a marginal cell, nor a distinct basal cell, the latter, if at all indicated, usually poorly defined by hyaline veins, visible only by

transmitted light; hind wings without a basal cell; antennæ elbowed..... .....Superfamily VII. **CHALCIDOIDEA.**

dd. Front wings with a stigma, the marginal vein usually large or stigmated (rarely linear in some Alysiids); abdomen with the ventral segments most frequently soft and membranous, with a fold (rarely hard and chitinous without a fold, Evaniidæ and Agriotypidæ); pronotum always extending back to the tegulæ.

Superfamily VIII. **ICHNEUMONOIDEA.**

Suborder II. Phytophaga. Abdomen broadly sessile; larvæ with legs.

Anterior tibiæ with only one apical spur.....Superfamily IX. **SIRICOIDEA.**

Anterior tibiæ with two apical spurs..Superfamily X. **TENTHREDINOIDEA.**

SUPERFAMILY III. VESPOIDEA.

Table of Families.

Abdomen either sessile or petiolate with the first ventral segment distinctly separated from the second by a more or less deep constriction or transverse furrow; legs most frequently fossorial.....5

Abdomen either sessile or petiolate, but with the second segment rarely separated from the first ventral by a strong constriction, or if constricted the legs are not fossorial, and the wings are usually folded in repose; in the former case the legs may be either fossorial or simple.

Posterior legs short, the femora rarely reaching to or at least much beyond the middle of the abdomen; legs most frequently not fossorial..... 2

Posterior legs long, the femora most frequently reaching to or beyond the tip of abdomen; tibiæ most frequently serrate or spinous, more rarely entirely without spines; middle tibiæ with two apical spurs.

Family XXVI. POMPILIDÆ.

2. Wings not folded in repose..... 3

Wings folded in repose.

Middle tibiæ with two apical spurs; claws simple; sexes three, ♀ ☿ ♂

Family XXVII. VESPIDÆ.

Middle tibiæ with one or two apical spurs; claws with one or more teeth beneath; sexes two, ♂ ♀.....Family XXVIII. EUMENIDÆ.

3. Metathoracic angles usually acutely produced; scutellum large, flat, conical, or spined.

Abdomen normal, with at least six distinct segments, the venter flat; antennæ usually strongly clavate, in ♀ knobbed at apex; scutellum very large, flat, species not metallic; antennæ 12-jointed .....Family XXIX. MASARIDÆ.

Abdomen abnormal, with 3 to 5 visible segments, the terminal segments retractile, telescopic-like, the venter concave or flat; antennæ most frequently filiform, inserted close to anterior border of head, 13-jointed; scutellum convex, conical or spined; species metallic.....Family XXX. CHRYSIDIDÆ.

Metathorax posteriorly truncate or rounded, rarely toothed; scutellum normal or in some wingless females entirely wanting; antennæ filiform, or sub-clavate; rarely flabellate in some males.

Hind wings *with* a distinct venation and *without* anal lobes; females never apterous..... 4

Hind wings *without* distinct venation and always *with* an anal lobe; females often apterous; middle tibiæ with two apical spurs; antennæ 10–15-jointed. Family XXXI. BETHYLIDÆ.

4. Middle tibiæ with two apical spurs, eyes normal, not emarginate within; antennæ 15-jointed or more, similar in both sexes....Family XXXII. TRIGONALIDÆ.
   Middle tibiæ with one apical spur; eyes reniform or emarginate within; antennæ in ♀ 12-, in ♂ 13-jointed.....Family XXXIII. SAPYGIDÆ.
5. Middle coxæ contiguous or nearly so.....7
   Middle coxæ distant, usually widely separated.....6
6. Stigma in front wings not well developed, at the most only slightly developed, either very small or linear; eyes most frequently emarginate within; middle tibiæ with two apical spurs.
   Pygidium in ♂ deeply emarginate at apex, the hypopygium terminating in a sharp thorn or aculeus which curves upwards and rests in the emargination of the pygidium; claws cleft.....Family XXXIV. MYZINIDÆ.
   Pygidium in ♂ entire or at most with only a slight emargination, the hypopygium terminating in three spines; claws simple. Family XXXV. SCOLIIDÆ.
   Stigma in front wings well developed, ovate or subovate; eyes entire, not emarginate within; pygidium in ♂ entire, the hypopygium terminating in a sharp aculeus which curves upwards.....Family XXXVI. TIPHIIDÆ.
7. Females always apterous and most frequently, but not always without ocelli; eyes variable.....9
   Females always winged with ocelli; eyes large, always attaining the base of the mandibles.....8
8. Abdomen sessile or subsessile, usually with a more or less distinct constriction between the dorsal segments 1 and 2; front wings with the stigma well developed, the marginal cell usually attaining the costa at apex (rarely is it rounded at apex with a slight space between, *Cosila* and allies); third wings usually without an anal lobe; the cubitus either interstitial or originating beyond the transverse median nervure very rarely originating a little before it; tibial spurs 1, 2, 2; tarsal joints normal; eyes entire; hypopygium entire, not ending in a spine or aculeus.....Family XXXVII. COSILIDÆ.
   Abdomen longly petiolate; front wings with the stigma not well developed, the second recurrent nervure subobsolete; hind wings bilobed, the cubitus originating far beyond the transverse median nervure; tibial spurs very long, straight; tarsal joints 2–3 in ♀ dilated, deeply excised or lobed and filled with a membrane between the lobes; eyes emarginate within; ocelli very large; antennæ very long, filiform, the joints with a bristle-like spine at apex. Family XXXVIII. RHOPALOSOMIDÆ.
9. Middle tibiæ with two apical spurs, rarely with one spur in some males.
   Middle coxæ usually slightly separated by a triangular or bilobed projection of the mesosternum; females with the thorax divided into three parts, the pygidium usually subcompressed or otherwise formed, usually abnormal; hypopygium in males most frequently armed. Family XXXIX. THYNNIDÆ.

Middle coxæ contiguous, not separated by a triangular or bilobed projection of the mesosternum, the latter being squarely truncate at apex.

Thorax in the females divided into two parts; pygidium normal; hypopygium in males produced into a sharp aculeus which curves upwards, or very rarely simple; hind wings *with* a distinct anal lobe, the cubitus originating from the apex of the submedian cell, interstitial with the transverse median nervure or rarely originating a little beyond it ..... Family XL. MYRMOSIDÆ

Thorax in females undivided, all the parts being closely united or soldered together without visible sutures between; pygidium normal; hypopygium in males simple, unarmed, but the genital plate is armed with two slender straight spines which project more or less distinctly from the tip of the abdomen; hind wings *without* an anal lobe, the cubitus always originating far *before* the transverse median nervure..... Family XLI. MUTILLIDÆ.

FAMILY XXXIX. THYNNIDÆ.

Table of Genera.

Females 9

Males

Mandibles bidentate..... 3

Mandibles tridentate.

First transverse cubitus with an appendage or a spurious nervure which divides the first submarginal cell into two more or less distinct divisions...2

First transverse cubitus without an appendage, the first submarginal cell not divided.

Second submarginal cell receiving both recurrent nervures; maxillary palpi 6-jointed, labials 4-jointed ..... **Trachypterus** *Guérin.*

Second submarginal cell receiving the first recurrent nervure, the second interstitial ..... **Oncorhinus** *Shuckard.*

2. Third submarginal cell larger than the second, the second and third each receiving a recurrent nervure; clypeus not prominent, with a slight triangular emargination, or impression anteriorly; mandibles with the apical tooth much longer than the two inner teeth; maxillary palpi 6-jointed, labials 4-jointed.

Telephoromyia *Guérin.*

3. Hypopygium at apex unarmed.....6

Hypopygium at apex dentate or with an aculeus.

Labrum very slightly visible, usually entirely covered by the projecting clypeus, which is most frequently squarely or roundedly truncate anteriorly 4

Labrum large, distinct and entirely uncovered.

Labium bilobed; pygidium transverse, longitudinally striated, the hypopygium tridentate, the lateral teeth short; second recurrent nervure angularly bent at the middle; maxillary and labial palpi 4-jointed.

Agriomyia *Guérin.*

4. First transverse cubitus with an appendage..... 5

First transverse cubitus without an appendage.

Hypopygium ending in an aculeus.

Clypeus anteriorly with a slight median sinus; first transverse cubitus distinct; maxillary palpi 5-jointed, labials 4-jointed.. **Anthobosca** *Guérin.*

Clypeus anteriorly produced into a triangular tooth; first transverse cubitus wanting or evanescent, maxillary palpi 4-jointed.... **Methoca** *Latreille.*

Hypopygium tridentate, the median tooth longer than the lateral.

Clypeus anteriorly with a median emargination; maxillary and labial palpi very short, both 3-jointed; marginal cell truncate at apex. **Iswara** *Westw.*

Clypeus anteriorly rounded not emarginate; maxillary palpi 4-jointed, labial palpi very short, 3-jointed; marginal cell acute at apex.

(Type *I. Koebelei* ASHM.) **Iswaroides** *Ashm.*, g. n.

5. Hypopygium narrow, briefly dentate or trilobed at apex; clypeus ovate, subemarginate or with a triangular impression at apex; maxillary palpi 6-, labials 4-jointed ..... **Elaphroptera** *Guérin.*

Hypopygium not narrow, ending in three strong teeth, the middle tooth a little longer than the lateral.

Clypeus produced and anteriorly rounded or sub-truncate; maxillary palpi 4 jointed..... **Ariphron** *Erichson.*

Clypeus prominent, narrowed, at apex anteriorly bidentate. **Ornepetes** *Guérin.*

Hypopygium produced into a distinct spine or with an aculeus.

Metathorax neither short nor abruptly sloping from base to apex.

Metathorax truncate behind, the angles acute; hypopygium small, hidden, but produced at apex into a long stout prong which curves upwards.

Rhagigaster *Guérin.*

Metathorax not truncate behind, a little longer than the mesonotum; hypopygium projecting and ending in a short aculeus, the pygidium transverse with some transverse rugæ toward the apex..... **Entelus** *Westw.*

Metathorax very short, abruptly sloping from base to apex; hypopygium large, triangular and ending in a small spine which extends beyond the pygidium.

Maxillary palpi 6-jointed, the joints not short, subequal; labials 4-jointed.

Thynnus *Fabr.*

Maxillary palpi 6-jointed, joints 1–3 minute, 4–6 very long.

Trachynomyia *Guérin.*

6. Third submarginal cell shorter than the second 8

Third submarginal cell longer than the second.

Mandibles narrow, curved, the teeth acute; abdomen oblong, subcylindrical, as long or longer than the head and thorax united.....7

Mandibles broad, the apical tooth large, obtuse; abdomen, oval, shorter than the thorax; claws cleft ..... **Amblysoma** *Westw.*

7. Hypopygium not prominent, obtuse at apex; clypeus somewhat produced, and anteriorly rounded, not excised; maxillary palpi 6-jointed, joints 1–3 united, about half as long as 4–6; labials 4-jointed, joint 1 not longer than 2–3 united.

Anodontyra *Westw.*

Hypopygium somewhat prominent, narrow, truncate at apex; clypeus ovate, subexcised or triangularly emarginate anteriorly; maxillary palpi 6-jointed, joint 1 short, the following subequal; labials 4-jointed, joint 1 shorter than 2–3 united.

Elaphroptera *Guérin.*

Hypopygium broader, subtriangular or subquadrate, obtuse or truncate at apex.

Clypeus strongly produced anteriorly, the apical margin truncate or slightly rounded; maxillary palpi 5-, labials 4-jointed..... **Eirone** *Westw.*

Clypeus broadly truncate at apex; maxillary palpi 6-jointed, labials 4-jointed.
Zeleboria *Sassure.*

Clypeus not strongly produced anteriorly, the apex subemarginate or excised; maxillary palpi 6-jointed, joints 1–3 rather short, 4–6 long, subequal, 5 or 6 times longer than thick; labials 4-jointed, the first joint long, slender, about as long as 2–4 united.....**Scotæna** *Klug.*

8. Clypeus not produced, excised anteriorly; maxillary palpi 6-jointed, joints 1–3 short, 4–6 very long; labials 4-jointed.....**Aelurus** *Klug.*

9. Body rather stout, not elongate; metathorax very short, obliquely transversely compressed or sublamellar; pygidium abnormal, narrowed, compressed or deflexed; claws usually cleft or bifid, rarely simple.....11

Body narrow, slender and elongate; abdomen cylindrical; thorax above flattened; metathorax elongate or at least not very short or sublamellar; pygidium normal; claws either simple or cleft.

Head without a sulcus or grooved line on temples behind the eyes; abdomen cylindrical.....10

Head quadrate with a sulcus or grooved line on temples behind the eyes; abdomen longer than the head and thorax united.

Claws simple; grooved line behind the eyes curved and not quite extending to the eyes; maxillary palpi 6-jointed, labials 4-jointed; first ventral segment simple.....**Glyptometopa** *Ashm.*

Claws cleft; grooved line behind the eyes straight and extending from eye almost to the occiput; maxillary palpi 6-jointed, labials stout, 4-jointed; first ventral segment with a tooth beneath.
Rhagigaster *Guérin* = *Diamma* SAUSS. nec *Westw.*

10. Claws cleft.

Head seen from above rounded, not or scarcely longer than wide; eyes very large; ocelli present; mandibles 3- or 4-dentate; maxillary palpi 6-jointed, labials 4-jointed.....**Trachypterus** *Guérin* = *Diamma* WESTW. ♀.

Head oblong, more than twice longer than wide; eyes minute; ocelli absent; mandibles bidentate at apex; maxillary and labial palpi both 4-jointed.
Eirone *Westwood.*

Claws simple.

Eyes minute; ocelli wanting; maxillary and labial palpi both 4-jointed.
Aelurus *Klug.*

Eyes large, oblong-oval; ocelli present; mandibles at apex bidentate, the lower tooth much the longer; maxillary palpi 4-jointed.....**Methoca** *Latreille.*

11. Head seen from above triangular (similar to *Trigonopsis* Perty), without ocelli; pronotum quadrate; second dorsal abdominal segment with two transverse folds; eyes small, oval, reaching base of mandibles; clypeus very short, truncate anteriorly; mandibles simple, falcate; maxillary palpi 4-jointed, labials 3-jointed; claws cleft....**Iswaroides** *Ashm.* (Type *I. kochelei* ASHM. ♀ g. n.

Head large, quadrate, much wider than the thorax; anterior margin of mesonotum curved, the angles rounded; second dorsal abdominal segment smooth, without transverse folds or carinæ; maxillary palpi 6-jointed; claws simple.
Ariphron *Erichson.*

Head not especially large, subglobose, subquadrate, or narrowly transverse; anterior margin of mesonotum straight, the angles more or less acute; second dorsal abdominal segment with transverse folds or carinæ.

Pronotum obtrapezoidal.

Head subquadrate or subglobose; eyes oblong oval, the malar space distinct; mandibles broad and flat, obtuse at apex and with a longitudinal sulcus or groove above along the inner margin for two-thirds their length; clypeus with a high median ridge or carina; pygidium not very narrow, deflexed, and *longitudinally striated*, the hypopygium dilated at apex; claws cleft..... **Thynnus** *Fabr.*

Head narrowly transverse, with two broad smooth furrows or impressions, extending from the base of each antenna to the vertex; eyes oval, the malar space wanting; mandibles not broad, falcate, acute at apex; clypeus transversely narrowed, without a median carina, and anteriorly rounded with a slight median emargination; pygidium strongly contracted at sides just before apex, the apex dilated and as seen from behind oval, above it is smooth, or *transversely* striated; claws cleft.

Agriomyia *Guérin.*

Head as seen from above subglobose, eyes small, oval, the malar space wanting; mandibles acuminate, but with a slight tooth within before apex; clypeus truncate with a slight triangular emargination anteriorly; basal abdominal segment with a strongly grooved circular furrow on each side; pygidium much narrowed, compressed before apex, with tufts of long hair on each side which curl over and meet above; hypopygium broadly dilated at apex.

Elaphroptera *Guérin* = *Ammodromus* GUÉRIN

Pronotum quadrate; eyes oval; mandibles subfalcate, acuminate; clypeus slightly produced without median carina; pygidium oval, not longitudinally striated; claws cleft..... **Entelus** *Westwood.*

FAMILY XL. MYRMOSIDÆ.

Table of Genera.

Males 5

Females.

Ocelli wanting..... 3

Ocelli present, distinct..... 2

2. Thorax quadrangular, the pronotum as wide as the meso-metathorax, usually rugose punctate or coarsely punctate; maxillary palpi 6-, labials, 4-jointed.

Myrmosa *Latreille.*

Thorax not quadrangular, compressed at sides from the meso-thoracic angles, the pronotum very much narrowed; mandibles strongly excised beneath, with a projection before the emargination. (Type *Mutilla incerta* RADOWSZKOWSKI.

Ephutomma *Ashm.* g. n.

3. Thorax in outline almost round; head quadrate; eyes very small, round; mandibles falcate; maxillary palpi 3-jointed; labial palpi 2-jointed.

Bradynobænus *Spinola.*

Thorax in outline not rounded.

Abdomen without a constriction between segments 2 and 3.....4

Abdomen with a strong constriction between segments 2 and 3.

Apterogyna *Latreille.*

4. Thorax quadrate, the sides from pronotum parallel; head very large, quadrate, wider than the thorax; mandibles long, bidentate at apex, sinuated or submarginated beneath; pygidium without a pygidial area.....**Brachycistis** *Fox.*

Thorax not quadrate, quite differently shaped.

Eyes oval, slightly sinuate on outer margin superiorly.

Abdomen sessile; pronotum transverse, a little wider than the meso-metanotum anteriorly but not wider than the same posteriorly, the sides being compressed just behind the pronotum.....**Milluta** *André.*

Eyes round or rounded.

Abdomen subpetiolate, the petiole enlarged towards apex with a strong constriction between it and the second segment; pronotum large, nearly obtrapezoidal and fully as wide or a little wider than the meso-metathorax. (Type *M. peculiaris* CR.) **Typhoctes** *Ashm.* g. n.

Abdomen with a distinct, slender petiole; pronotum campanulate, much narrower than the meso-metathorax.....**Cyphotes** *Blake.*

5. Stigma and marginal cell distinct.....7

Stigma and marginal cell wanting.....6

Stigma present, narrow, elongate, the marginal cell wanting, front wings with only the median cell distinct; antennæ very long, filiform; abdomen ovate, with a very short petiole; pygidium tridentate at apex.

Bradynobænus *Spinola* (= *Chestus* SPINOLA).

6. Abdomen subpetiolate, with a strong constriction between the second and third segments; front wings with one very small submarginal cell and a median and a submedian cell; abdomen ending in an aculeus..... **Apterogyna** *Latreille.*

7. Abdomen ending in an aculeus which curves upwards; front wings with a short marginal cell.....8

Abdomen unarmed at apex, without an upward curved aculeus.

Front wings with three submarginal cells.

Marginal cell long, and with four submarginal cells, the second and third each receiving a recurrent nervure.....**Myrmosa** *Latreille.*

Marginal cell rather short, triangular, the second submarginal cell triangular, receiving the first recurrent nervure near the middle, the third submarginal cell hexagonal; eyes large, extending to base of mandibles with an emargination within.....**Ephutomma** *Ashm.* g. n.

8. Middle tibiæ with 2 apical spurs.....9

Middle tibiæ with 1 apical spur.

Front wings with three submarginal cells, the second and third each receiving a recurrent nervure; cubitus in hind wings interstitial or nearly, with the transverse median nervure; mesonotum with furrows.

Abdomen with a more or less distinct constriction between the first and second segments; scutellum rounded, subconvex; first recurrent nervure *usually* joining the *second* submarginal cell *before* the middle; mandibles tridentate.....**Brachycistis** *Fox.*

Abdomen *without* a constriction between the first and second segments; scutellum quadrate; first recurrent nervure joining the second submarginal cell *beyond* the middle.....**Milluta** *André.*

9. Front wings with three submarginal cells and two recurrent nervures.....10
Front wings with two submarginal cells.
Only one recurrent, which is received by the second submarginal cell.
Typhoctes *Ashm* g. n. ♀
Two recurrent nervures, both received by the second submarginal cell.
Cyphotes *Blake* (pars.)

10. Second submarginal cell receiving both recurrent nervures. .. **Cyphotes** *Blake.*

FAMILY XLI. MUTILLIDÆ.

The genera *Scaptodactyla* Burmeister and *Scaptopoda* Lynch-Arribalzaga, are not included in the following table, since I have not been able to secure specimens, or to consult the descriptions; the works in which these genera are described not being in the libraries in Washington and Philadelphia.

Table of Genera.

Males.....15
Females.

1. Abdomen petiolate or subpetiolate, or *with* a distinct constriction or furrow between the first and second segments.....8
Abdomen sessile or subsessile, *without* a constriction or furrow between the first and second segments, the first segment uniting with the second its entire breadth.2

2. Thorax obpyriform, or narrowed posteriorly, or strongly contracted medially at sides, as seen from above *often* hexagonal.....5
Thorax quadrangular or cubiform, not narrowed posteriorly, rather abruptly or perpendicularly truncate behind, the dorsal profile straight, the lateral margins parallel or scarcely perceptibly curved inwardly medially; head most frequently quadrate or subquadrate.
Pygidium *without* a pygidial area.....3
Pygidium *with* a pygidial area, or at least with elevated lateral margins.....4

3. Antennal foveæ bounded by a carina superiorly.
Head large, quadrate, wider than the thorax; eyes oval; mandibles broadened towards apex, tridentate; first joint of flagellum about twice as long as the second or as long as joints 2–3 united; lateral margins of thorax parallel.
Myrmilla *Wesmael.*
Head not so distinctly quadrate, more rounded, not wider than the thorax; eyes ovate or oval; mandibles not broadened towards apex, bidentate, the outer tooth the longer, acute; first joint of flagellum longer than joints 2–3 united; lateral margins of thorax slightly curved inwardly medially....**Ronisia** *Costa.*

4. Antennal foveæ *not* bounded by a carina superiorly.....7
Antennal foveæ bounded by a carina superiorly.
Head quadrate or subquadrate; eyes moderately large, ovate, oval or elliptical, but never round.

Lateral margins of the metathoracic truncature normal, rarely dentriculated; anterior tarsi with a long, stiff tarsal comb.

Lateral margins of the thorax straight, parallel; head large, quadrate, usually much wider than the thorax; mandibles at apex tridentate, the outer tooth the longer, acute..... **Mutilla** *Linne.*

Lateral margins of the thorax usually slightly curved inwardly medially, therefore not exactly parallel; head subquadrate not or scarcely wider than the thorax; mandibles simple, narrowed towards apex, dentate or at most with a slight tooth within before apex; maxillary palpi long, 6-jointed, labials 5-jointed; third joint of antennæ thicker toward apex, as long as joints 4–5 united.

(Type *M. dubitata* SMITH) **Timulla** *Ashm.*

Lateral margins of the metathoracic truncature dentate, or denticulated; anterior tarsi with a short tarsal comb; mandibles simple without a tooth within; maxillary palpi long, 6-jointed, labials 4-jointed, joints 2–4 compressed, the second wider than long; first joint of flagellum obconical, not longer than wide at apex. (Africa.)

(Type *O. abbottii* ASHM. ms.) **Odontomutilla** *Ashm.* g. n.

5. Antennal foveæ shallow, *not* bounded by a carina superiorly.....7

Antennal foveæ bounded by a distinct carina superiorly.

Eyes round, prominent, distant from base of mandibles.....6

Eyes prominent, oval, ovate, or elliptical.

Pygidium smooth, *without* a pygidial area; thorax very elongate, more than thrice longer than wide, coarsely pitted or rugose, the anterior margin rounded, the lateral hind angles of the mesonotum produced outwardly into a triangular tooth; second ventral segment with a median tooth; head subquadrate, hardly as wide as the thorax, rounded behind; mandibles edentate. (Africa.)

(Type *M. guineensis* FABR.) **Dolichomutilla** *Ashm.* g. n.

Pygidium with a pygidial area; thorax scarcely twice as long as wide, unarmed, the sides more or less contracted medially, almost violin-shaped; second ventral segment normal; head large, quadrate, wider than the thorax, the hind angles acute, cheeks beneath armed with a strong tooth; mandibles usually bidentate, rarely simple, the outer tooth much the longer.

Pseudomethoca *Ashm.*

6. Head quadrate or subquadrate, the hind angles rounded, not acute; pygidial area distinct; mandibles not excised beneath, simple, edentate or with a slight tooth within before apex.

Thorax elongate, nearly thrice as long as wide, very coarsely irregularly pitted or foveolated, the anterior margin squarely truncate, the angles acute or toothed; lateral hind angles of mesonotum produced outwardly into a triangular tooth; mandibles edentate; maxillary palpi 6-jointed, the first two short; labials 4-jointed, the third dilated, the last long, fusiform. (Australia.)

(Type *M. rugicollis* WESTW.). **Bothriomutilla** *Ashm.* g. n.

Thorax hardly twice as long as wide, as seen from above more or less hexagonal, unarmed.

Head quadrate or subquadrate; mandibles beneath entire, acuminate, edentate or with one or two small teeth within before apex; body most frequently bare or nearly bare, more rarely with a short dense pubescence, generally confined to the abdomen.....**Nomiæphagus** *Ashm.* g. n.

Head transverse; mandibles beneath with a sinus or emargination on basal one-fourth or third, apex acuminate with a slight tooth within before tip; body clothed with a dense pubescence.

(Type *S. anthophoræ* ASHM.) **Pyrrhomutilla** *Ashm.* g. n.

7. Thorax fully as wide as long, hexagonal; head subglobose, much narrower than the thorax; mandibles simple, acute at apex, edentate; maxillary palpi 5-jointed, labials 3-jointed (Australia) ....**Eurymutilla** *Ashm.* g. n.

Thorax almost quadrangular, about 1½ times as long as wide, or a little longer, only slightly narrower posteriorly than anteriorly; head transverse or subglobose; eyes somewhat rounded or very short oval; mandibles with an emargination beneath, pointed at apex, edentate; first joint of flagellum not or scarcely longer than wide, shorter or very little longer than the third; body almost bare.

Photopsis *Blake*

Thorax obpyriform, about twice as long as wide; head subquadrate or subglobose eyes short oval or rounded.

Mandibles excised beneath.....**Tricholabiodes** *Radoszk.*

Mandibles not excised beneath.....**Sphærophthalma** *Blake* (pars)

8. Thorax obpyriform, or at least always narrowed posteriorly, never quadrangular or cubical, often hexagonal or fiddle-shaped, the lateral margins not parallel, the dorsal profile most frequently arcuate or convexly rounded.....9

Thorax quadrangular or cubiform, not narrowed posteriorly, usually abruptly or almost perpendicularly truncate behind, the dorsal profile straight or nearly, the lateral margins parallel or nearly, rarely with a slight inward curve medially.

Head subquadrate; eyes oval, distant from base of mandibles; antennal foveæ bounded by a carina superiorly; mandibles simple, with a slight tooth within before apex; first joint of flagellum longer than joints 2–3 united; metathorax with a prominent median tooth or spine above.....**Ronisia** *Costa.*

9. Antennal foveæ deep, distinct, and bounded by a carina superiorly..... 10

Antennal foveæ rather shallow, *not* bounded by a carina superiorly.....11

10. Head subquadrate, transverse or subglobose.

Eyes round, far from base of mandibles; mandibles not excised beneath, simple, edentate or with a slight tooth within before apex.

Sphærophthalma *Blake.*

Eyes short oval or round; mandibles sinuate or excised beneath with usually a small tooth within before apex.....**Tricholabiodes** *Radoszk.* (pars)

11. Pygidium not smooth, often longitudinally striated or rugulose, and always *with* a distinct pygidial area 12

Pygidium smooth, *without* a pygidial area.

Thorax only about twice as long as wide, unarmed; head subquadrate, not wider than the thorax; eyes short oval, nearly round, the malar space as long as the eye; mandibles with a tooth within before apex; first joint of flagellum obconical, longer than the second.....**Stenomutilla** *André.*

12. Eyes round or rounded.....13
Eyes ovate, oval, or elliptical; mandibles not excised beneath.
Head very large, quadrate, about twice as wide as the thorax, or very much wider, the hind angles sharp, or acute; beneath armed with 4 teeth, two small ones at base of gula and two much larger ones, one on each cheek; mandibles bidentate, the lower tooth much the longer.
(Type *M. spinosa* Roed.) **Hoplomutilla** *Ashm.* g. n.
Head quadrate or subquadrate, unarmed beneath, and not or rarely much wider than the thorax.
Metathorax truncate behind, the spiracles linear; mandibles with one or small teeth within before apex; first joint of flagellum longer than the second..... **Dasylabris** *Radoszkowski.*
Metathorax convexly rounded behind, the spiracles rounded or very short oval; mandibles simple or at most with a slight tooth within some distance before the apex; first joint of flagellum usually wider than long, smaller than the second. .....**Ephuta** *Say.*
(Type *E. scrupea* SAY ♂) = *M. parvula* CR. ♀

13. Head globose or subglobose.
Mandibles entire, not excised beneath, eyes small; first joint of flagellum not much longer than thick.....**Cystomutilla** *André.*
Mandibles strongly excised beneath, with a process or projection before the incision; eyes distant from base of mandibles.. **Tricholabiodes** *Radoszk.*
Head quadrate, subquadrate or transverse.
Mandibles *not* excised beneath 14
Mandibles, or at least the left mandible, excised beneath and usually with a process or projection before the incision.
Thorax in profile arcuate; eyes usually with a slight sinus on outer edge near apex. .....**Tricholabiodes** *Radoszk.*

14. Eyes extending to or nearly to the base of the mandible; metathorax subtruncate; the spiricals oval or elliptical; mandibles subfalcate with a small tooth within, much before apex; first joint of flagellum obconical, as long or longer than the second.....**Photopsis** *Blake.*
Eyes distant from the base of the mandibles, a wide space between.
Body very hairy; mandibles simple, acuminate, edentate, or at the most with a slight tooth within before apex; maxillary palpi 6-, labials 4-jointed, the second and third dilated; first joint of flagellum as long as joints 2–3 united.....(Type *S. gorgons* BLAKE) **Dasymutilla** *Ashm.* g. n.
Body bare or nearly bare, or at least not densely hairy; mandibles simple, edentate, or with a light tooth within some distance before apex; maxillary palpi 6-, labials 4-jointed.....**Sphærophthalma** *Blake.*

15. Winged.....16
Wingless.....**Myrmilla** *Wesmael.*

16. Flagellum simple, filiform.....17
Flagellum flabellate..... .....**Psammotherma** *Latr.*

17. Second submarginal cell receiving only one recurrent nervure, the second recurrent when present, received by the third submarginal cell.....18
Second submarginal cell receiving both recurrent nervures.
(Type *M. melicerta* SMITH) **Allomutilla** *Ashm.* g. n.

18. Eyes round, or short oval, *not* emarginate within..... 22
Eyes very large, occupying most of the sides of the head, not emarginate within, but *sinuate* or emarginate on their *external* margin superiorly.....21
Eyes long oval, or ovate, and always more or less deeply emarginate *within* at their apical third.
Front wings with two submarginal cells.....20
Front wings with three submarginal cells, or the third at least partially formed, not entirely obliterated.. 19

19. Metathoracic angles, normal, neither produced nor dentate; abdomen sessile or subsessile, the first segment not separated from the second by a constriction or furrow.
Scutellum conically or triangularly elevated; mesonotum with distinct furrows; mandibles bidentate; hypopygium margined at sides, emarginate at apex. (Africa.)
(Type *M. medon* SMITH) **Trogaspidia** *Ashm.* g. n.
Scutellum normal, at the most subconvex.
Mesonotum with distinct furrows or the furrows always indicated posteriorly; stigma usually well developed, but sometimes pale or open in the middle; scape normal.
Mandibles excised or sinuate beneath before the middle and usually with a process or projection before the incision; dorsal abdominal segments 3–6 without a median longitudinal carina.
Mandibles at apex tridentate; first joint of flagellum usually longer than the second ..... **Mutilla** *Linné.*
Mandibles at apex bidentate; first joint of flagellum not longer than the second ..... **Timulla** *Ashm.* g. n.
Mandibles simple, not excised beneath, at apex bidentate; dorsal abdominal segments 3–6, usually with a median longitudinal carina. **Ronisia** *Costa.*
Mesonotum *without* distinct furrows; stigma not well developed; mandibles normal, bidentate Scape bicarinate beneath; first and second joints of flagellum usually transverse or not longer than wide **Ephuta** *Say.*

20. Metathorax with the upper hind angles produced into a tooth; mesonotum *without* distinct furrows; scutellum large, flat, the hind angles produced into a tooth which curves inwardly. (Africa.) Type *O. abbotti* ASHM. **Odontomutilla** *Ashm.* g. n.
Metathorax normal; mesonotum *with* distinct furrows; scutellum normal, the post scutellum armed on each side with a small nearly vertical tooth or spine; stigma large, the marginal cell long..... .....**Pseudophotopsis** *André.*

21. Post scutellum armed on each side with a small nearly vertical tooth. **Pseudophotopsis** *André.*
Post scutellum unarmed; abdomen longly petiolated, the petiole subclavate; mesonotum *with* distinct furrows.
Front wings with three submarginal cells, the third sometimes incomplete or only partially formed; stigma small and indistinct or hyaline within; mandibles strongly excised beneath.....**Tricholabiodes** *Radoszk.*

Front wings with three submarginal cells, the third cubital again divided into two nearly equal cells by a longitudinal vein originating from the middle of the second transverse cubital vein; mandibles excised beneath; eyes extending to the base of mandibles. (Asia.)

Alloneurion *Ashm.* g. n. (Type *A. kotepetica* RADOSZK.)

22. Abdomen petiolate or subpetiolate, or always *with a constriction or furrow* between the apex of the first and base of second segment.....26

Abdomen sessile or sub-sessile, *without* a constriction or furrow between the first and second segments, the apex of the first broadly sessile with the base of the second.

Front wings with three submarginal cells or the third is more or less partially formed, not entirely obliterated.....25

Front wings with only two submarginal cells, the third entirely obliterated..23

23. Eyes oval; head quadrate, usually wider than the thorax.

Myrmilla *Wesmael.*

Eyes round; stigma well developed.....24

24. Mesonotum *with* well defined furrows, or with furrows distinct posteriorly.

Mandibles of an equal thickness to apex, where they are tridentate; beneath with a slight emargination before the middle; malar space short, but distinct.....**Photopsis** *Blake* (pars.)

Mandibles more pointed toward apex, bi- or tridentate, but with the lower or outer tooth much the longer, acute; beneath sinuate or emarginate; malar space entirely wanting, the eyes extending to base of manibles.

Tricholabiodes *Radoszk.* (pars.)

Mesonotum *without* distinct furrows.

Head transverse, the temples very oblique; ocelli large; first joint of flagellum cylindrical, longer than wide, but still shorter than the second; second submarginal cell triangular; submedian cell much larger than the median. (Type *P. nanus* ASHM.) **Micromutilla** *Ashm.* g. n.

Head quadrate, the hind angles acute; ocelli small; first joint of flagellum quadrate or hardly longer than thick; second submarginal cell pentagonal; submedian cell not longer than the median.....**Pseudomethoca** *Ashm.*

25. Marginal cell rounded off at apex, not broadly truncate.

Head subquadrate, the ocelli small; mandibles toward apex broadened and tridentate, the outer tooth the longest, acute; mesonotal furrows wanting; first joint of flagellum scarcely longer than thick, much shorter than the second.....(Type *S. sanbornii* BLAKE) **Nomiæphagus** *Ashm.* g. n.

Head transverse, seen from above obtrapezoidal, the ocelli large; mandibles beneath with a sinus or an emargination, acuminate and with a tooth within before apex, mesonotal furrows distinct; first joint of flagellum twice as long as thick and as long as the second.

(Type *S. anthophoræ* ASHM.) **Pyrrhomutilla** *Ashm.* n. g.

Marginal cell broadly truncate at apex; mesonotum with distinct furrows; mandibles at apex bidentate, not excised beneath; second ventral segment more or less conically produced or elevated at basal middle.

Eurymutilla *Ashm.*

26. Second ventral segment *with* a small longitudinal impression on each side towards the middle, filled with a pubescence resembling dull black felt.

Stenomutilla *André.*

Second ventral segment *without* such impressions.

Front wing with two submarginal cells, the third entirely obliterated.....30

Front wings with three submarginal cells, or the third partially formed, not entirely obliterated.....27

27. Stigma more or less well developed, truncate or rounded at apex.....28

Stigma not well developed, minute.

Marginal cell rounded, not truncate at apex, the third submarginal cell along the radius very short, shorter than the second; mesonotum *with* distinct furrows on the posterior half or two-thirds, obliterated anteriorly.

Mandibles at apex tridentate; first joint of flagellum about half the length of the second.....**Dasylabris** *Radoszk.*

28. Stigma well developed, oblong oval, rounded at apex; *the marginal cell usually* short.....29

Stigma not so large or well developed, obliquely truncate at apex or sublanceolate, often clear or open in the middle.

Marginal cell broadly truncate at apex.

Mesonotum *without* distinct furrows at the most with an indistinct furrow on the shoulders; third submarginal cell along the radius fully twice as long as the second, or even longer; pygidial area distinct.

Mandibles at apex broad, tridentate, with a slight sinus or emargination beneath nearly the middle.

Sphærophthalma BLAKE (Type *S. scæva* BLAKE)

Mandibles toward apex more or less bluntly pointed with usually one tooth within before apex; body densely clothed with long hair.

Dasymutilla ASHM. g. n. (Type *S. gorgous* BLAKE)

29. Marginal cell rounded, not truncate at apex.

Mesonotum *with* four more or less distinct furrows.

Eyes extending to base of mandibles or nearly; ocelli large.

Mandibles not excised beneath, of an equal thickness to apex, where they are truncate and tridentate, the teeth nearly of an equal size.

Photopsis *Blake* (Type *P. imperialis* BLAKE)

Mandibles strongly excised or emarginate beneath from near the middle to apex and usually with a process or projection before the incision, bi- or tridentate, the teeth very unequal.

Tricholabiodes *Radoszk.*

30. Stigma not well developed, indistinct; mesonotum *without* furrows; abdomen distinctly petiolate.....**Dasylabris** *Radoszk.*

Stigma well developed; mesonotum *with* furrows; abdomen subpetiolate.

Head large, quadrate, armed beneath with four teeth, two at base of gula and a very large tooth or spine on each cheek beneath; ocelli small.

Hoplomutilla *Ashm.* g. n.

Head normal, unarmed, subquadrate or subglobose.

Ocelli not large, mandibles not excised beneath..**Cystomutilla** *André.*

Ocelli large, prominent; mandibles excised or sinuate beneath, at apex bidentate.....**Photopsis** *Blake* (pars)